



# Cisco Support Community Expert Series Webcast:

# Single and Multi-Site FlexPod infrastructure

Haseeb Niazi  
Technical Marketing Engineer

September 18<sup>th</sup> 2013

# Cisco Support Community – Expert Series Webcast

- Today's featured expert is Cisco Technical Marketing Engineer
- Ask him questions now about FlexPod



**Haseeb Niazi**

CCIE in Routing and Switching

# Topic: Single-Site and Multisite FlexPod Infrastructure

## Panel of Experts



Derek Huckaby  
Technical Marketing Manager



David Klem  
Sr. Reference Architect, NetApp  
Infrastructure & Cloud Engineering Team

# Thank You for Joining Us Today

Today's presentation will include audience polling questions

We encourage you to participate!





# Thank You for Joining Us Today

If you would like a copy of the presentation slides, click the PDF link in the chat box on the right or go to

<https://supportforums.cisco.com/community/netpro/data-center/unified-computing>

Or, <https://supportforums.cisco.com/docs/DOC-36639>



# Polling Question 1

## How many of you know about FlexPod?

- a) I have heard about FlexPod but am not sure what it is
- b) I know about FlexPod but do not know about various flavors of FlexPod.
- c) I am considering deploying a FlexPod in our environment.
- d) I'm running FlexPod in our production Data Center.

# Submit Your Questions Now!

Use the Q&A panel to submit your questions. Experts will start responding those





# Cisco Support Community Expert Series Webcast:

# Single and Multi-Site FlexPod infrastructure

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# Agenda

- **FlexPod Overview**
- **FlexPod Single Site Infrastructure**
  - Core components
  - Design Details
- **FlexPod Multi Site Infrastructure**
  - Design Details
  - Resiliency
- **FlexPod Management**

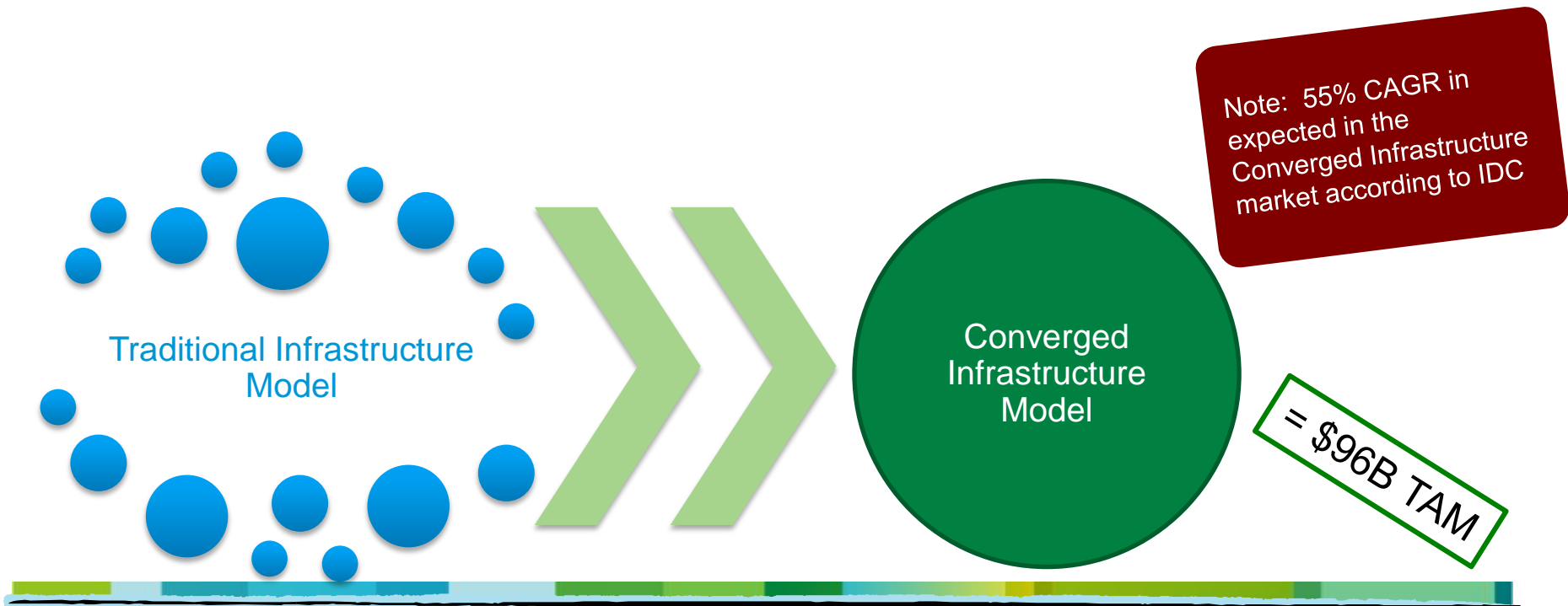


# FlexPod Overview



# Motion to Converged Infrastructure

- Agility - Time to service market
- Cost advantages and efficiency
- Infrastructure and operations improvements
- Moving from IT maintenance to IT innovation
- Better performance
- Improved cost/performance ratio
- Simplified deployment
- Increased automation



# FlexPod – Delivering Unified Data Center

Cisco UCS™ B-Series or C-Series and Cisco UCS Manager



or



Cisco Nexus® Family of Switches

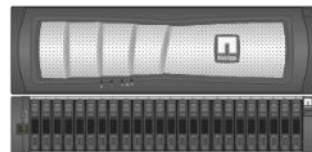


or



Nexus 5000 & 7000

NetApp® FAS OnCommand™ Software Suite 10GE and FCoE



## Features

- Standard, pre-validated, best-in-class converged platform:
- Virtualized and non-virtualized environments
- **Flexible:** Future-proof platform to meet today's challenges and scale for future needs

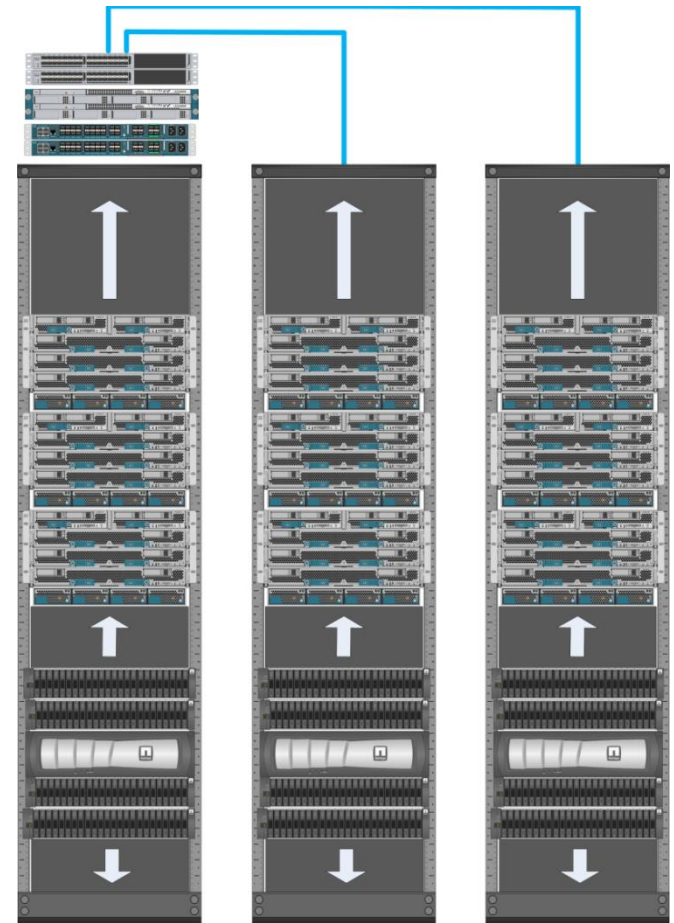
## Benefits

- **Choice**
- **Availability:** ISSU, DCI, and Non-disruptive Operations
- **Scalability:** Highest Density 10/40/100GE in a modular chassis, virtualization support
- **Validated DC Technologies:** multi-hop FCoE, VPC, OTV, VDCs, unified ports
- **Reduced risk:** Validated architecture with prescriptive sizing and design guides resulting in lower total cost of ownership (TCO)



# Scale Out with FlexPod

- Scale out with standard and proven configurations:
  - Predictable and highly efficient:
  - Capacity and performance
  - Floor space, power, and cooling
- Benefits:
  - Reduce effort for architecture, design, deployment, and testing
  - Reduce infrastructure deployment cycle time by up to 50%
  - Manage pools consisting of storage, compute, and networking resources, not individual systems

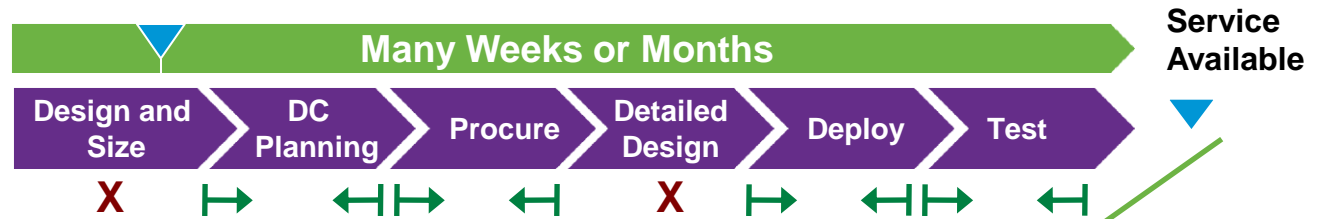


Increased performance and capacity

# FlexPod - Accelerate the Business

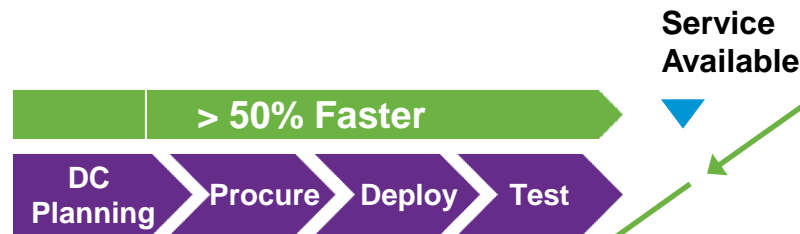
## Service Request

### Traditional



### With FlexPod™

Reference BoM  
Validated design  
Precise deployment  
Standard test plan



### Preprovisioned FlexPod

Rapid deployment of applications  
Shared pools meet most requirements

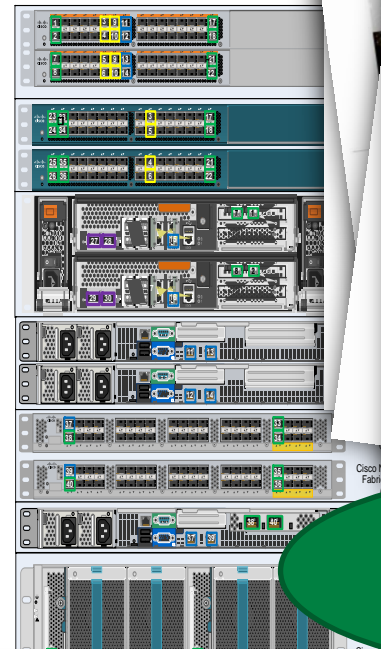


## Benefits

- Agile service delivery
- Higher productivity
- Faster deployment
- Higher quality
- Simpler planning

# FlexPod Detailed Deployment Collateral

- Detailed design guidance and use case examples
- Step-by-step instructions for repeatable high-quality deployments, including these use cases:
  - FlexPod
  - Desktop Virtualization
  - SAP® applications
  - Microsoft® applications

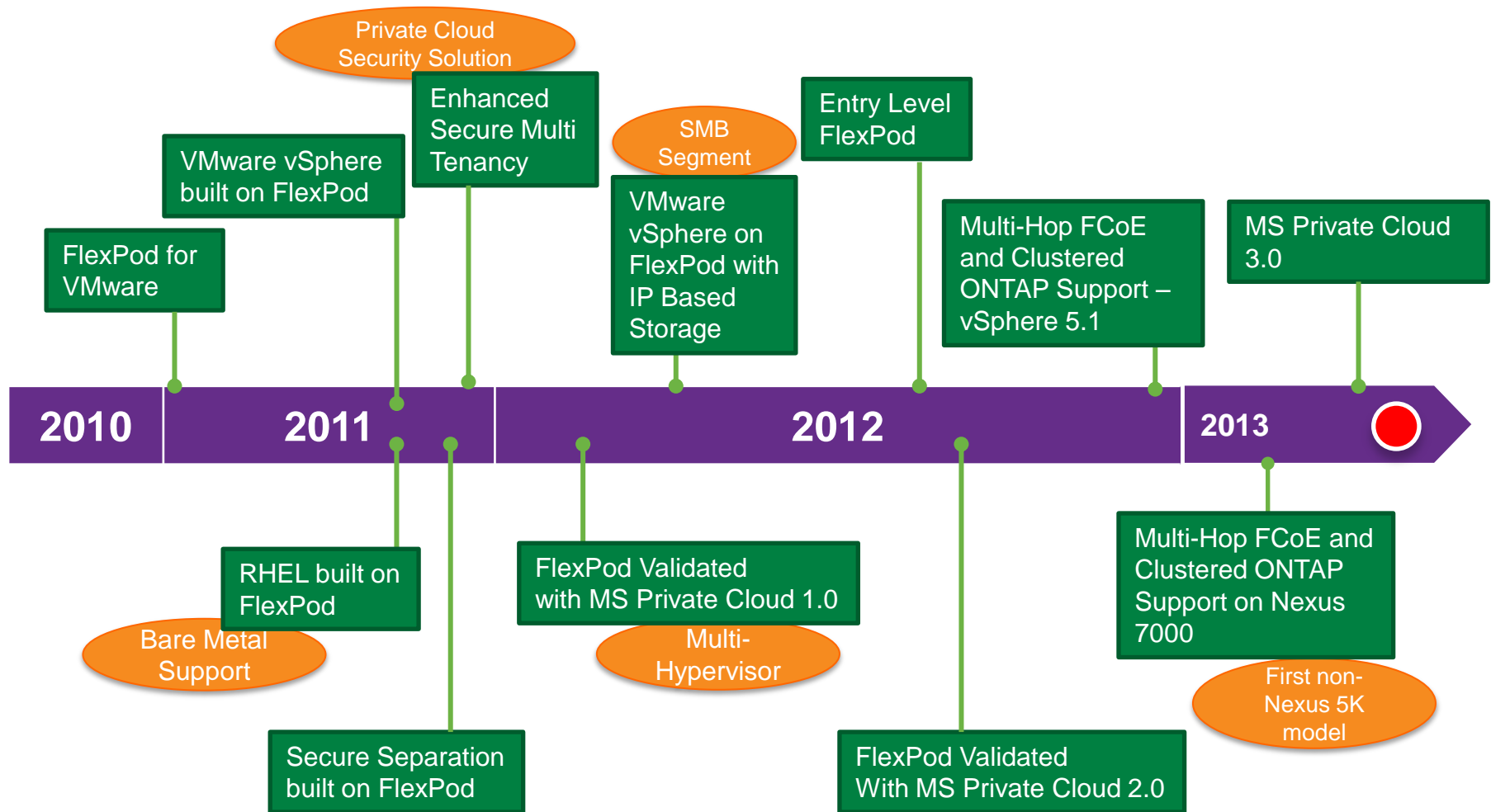


Cisco Validated Design (CVD)

Step by step cabling and configuration guidance provided provided for all FlexPod implementation models



# Evolution of FlexPod Designs





# FlexPod Single Site Infrastructure

# Polling Question 2

## How many of you use Cisco Unified Compute System (UCS)?

- a) I don't know what UCS is.
- b) I know about UCS but am not sure if I need it.
- c) I am evaluating UCS and work on it on a daily basis.
- d) I have production workloads running on a UCS

# Technical Design Requirements

## Cisco Design Principles

- Operational continuity/HA
- Transport flexibility such as FC, Ethernet/FCoE, and Overlay Transport Virtualization (OTV)
- NX-OS for scalability

## NetApp Design Principles

- Operational continuity/high availability (HA)
- Access flexibility such as Fibre Channel (FC), Fibre Channel over Ethernet (FCoE), and network-attached storage (NAS) protocols
- NetApp<sup>®</sup> Data ONTAP<sup>®</sup> for scalability

# Flexing a FlexPod Configuration

## Required Components

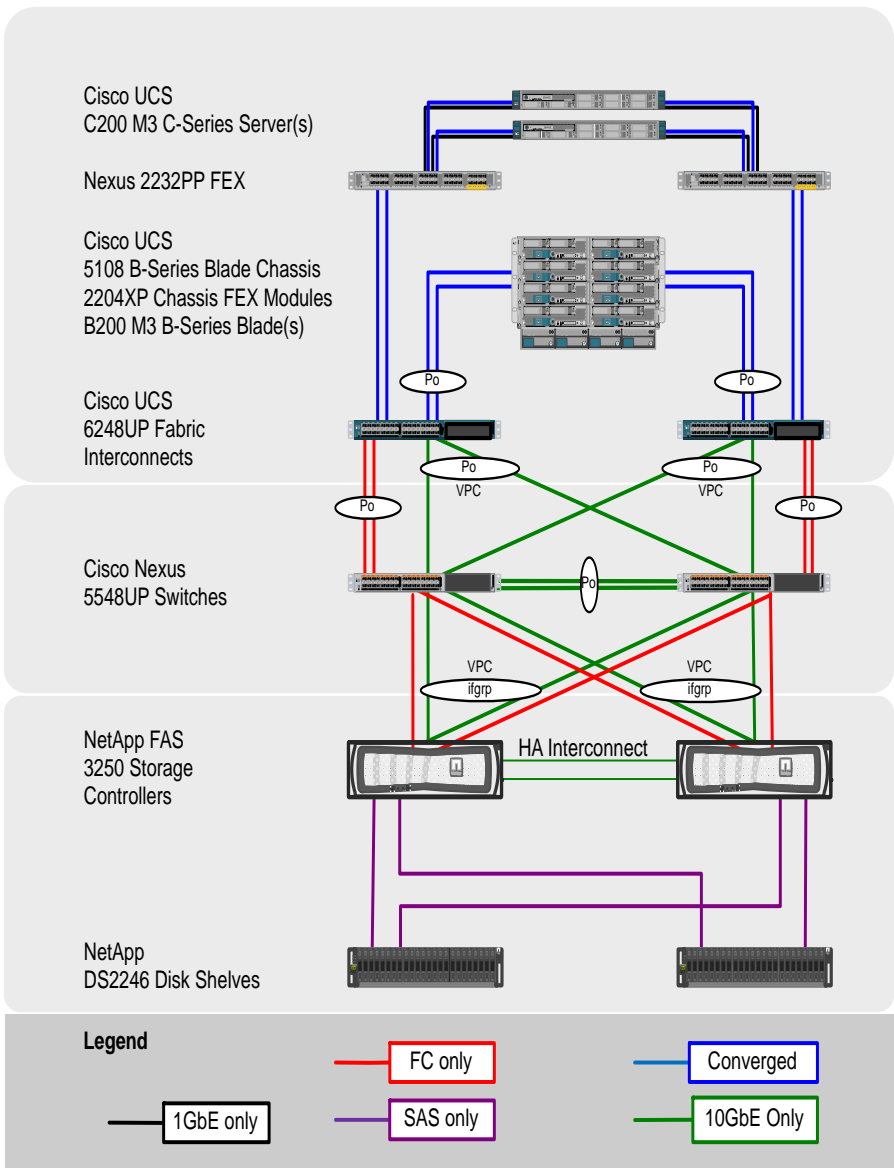
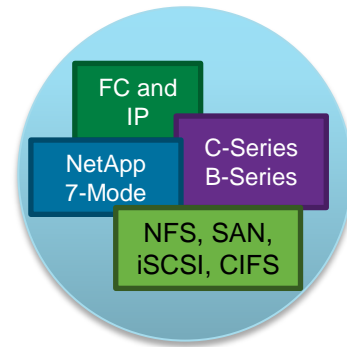
- Cisco Unified Computing System™ (Cisco UCS™) chassis or integrated rack mounts
- Cisco UCS blades or integrated rack mounts with VIC adapter
- Redundant Cisco UCS FIs
- Redundant Cisco Nexus® Switching
- Redundant NetApp® FAS
- Certain software and redundancy features

## Flexible Components

- Cisco UCS blade or integrated rack mount model and quantity
- Port count of Cisco Nexus Switching
- Fabric-attached storage (FAS) controller size
- Number of FAS controllers in a clustered environment
- FAS disk type, count, and size
- Add-on cards, modules, and interfaces

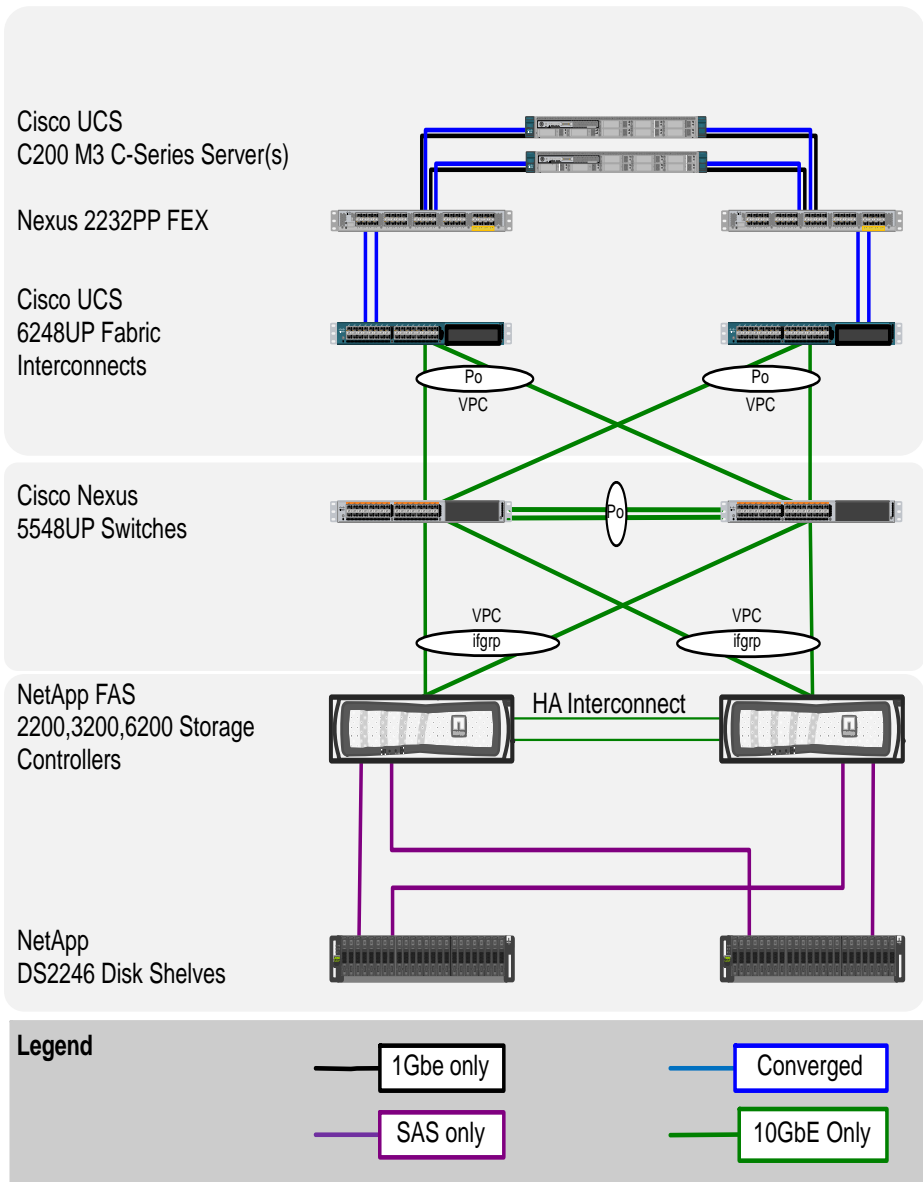
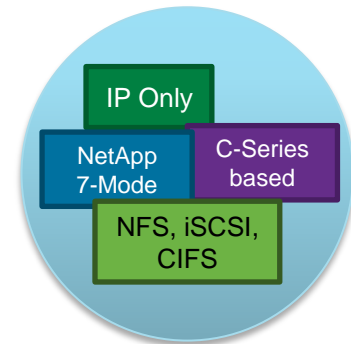


# Dedicated Fibre Channel design



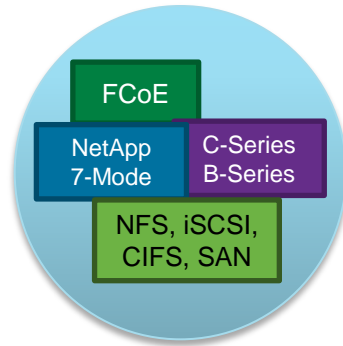
- First model of FlexPod
- Fully redundant configuration
  - vPC for Ethernet Traffic
  - FC Port Channels maintaining SAN A/B isolation
  - FC direct links form “A” and “B” targets on the controller
- Nexus 5500s provide zoning functionality
- NetApp Controllers form an HA pair

# Entry-Level IP Only Design



- Documented as C-Series only
  - Typical size 4-6 rack mounts
- Right-sized for smaller workloads
- No Fiber Channel Present, Ethernet only fabric
- iSCSI, NFS, CIFS fully supported
  - iSCSI boot
  - PXE boot\*

# FCoE and NetApp 7-Mode



## Discrete Uplink Model highlights:

- UCS in End Host Mode
- FCoE port channels offer link fault tolerance and improved aggregate bandwidth
- vPC provides link and device fault tolerance with increased aggregate bandwidth
- Mimics traditional SAN deployment

## Benefits include

- Infrastructure consolidation
- Simplified operational model
- Operational efficiencies

Cisco UCS  
C200 M3 C-Series Server(s)

Nexus 2232PP FEX

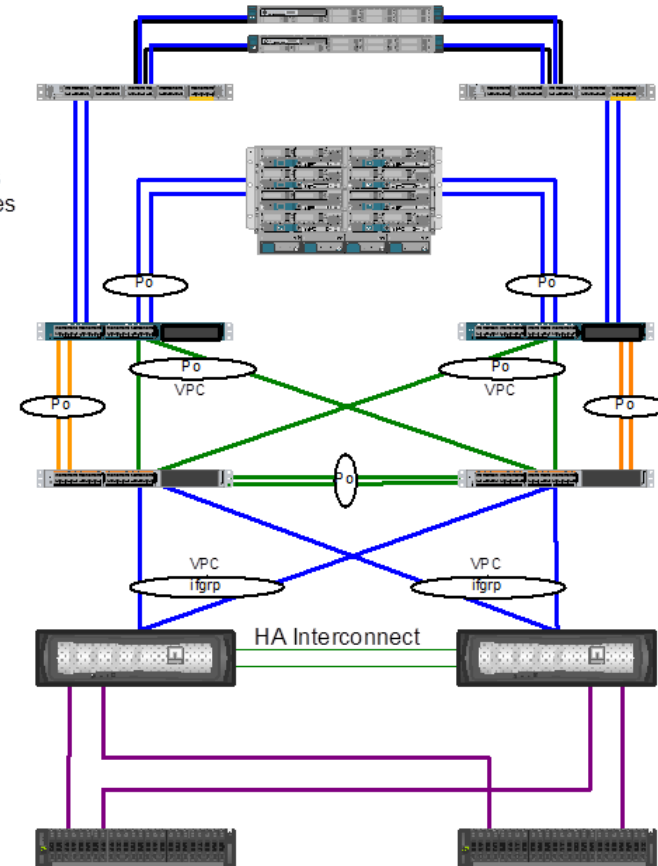
Cisco UCS  
5108 B-Series Blade Chassis  
2204XP Chassis FEX Modules  
B200 M3 B-Series Blade(s)

Cisco UCS  
6248UP Fabric Interconnects

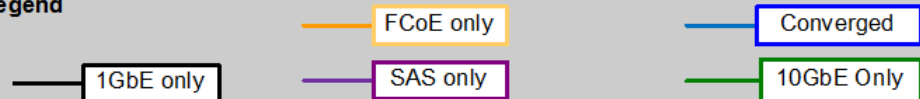
Cisco Nexus  
5548UP Switches

NetApp FAS  
3250 Storage  
Controllers

NetApp  
DS2246 Disk Shelves



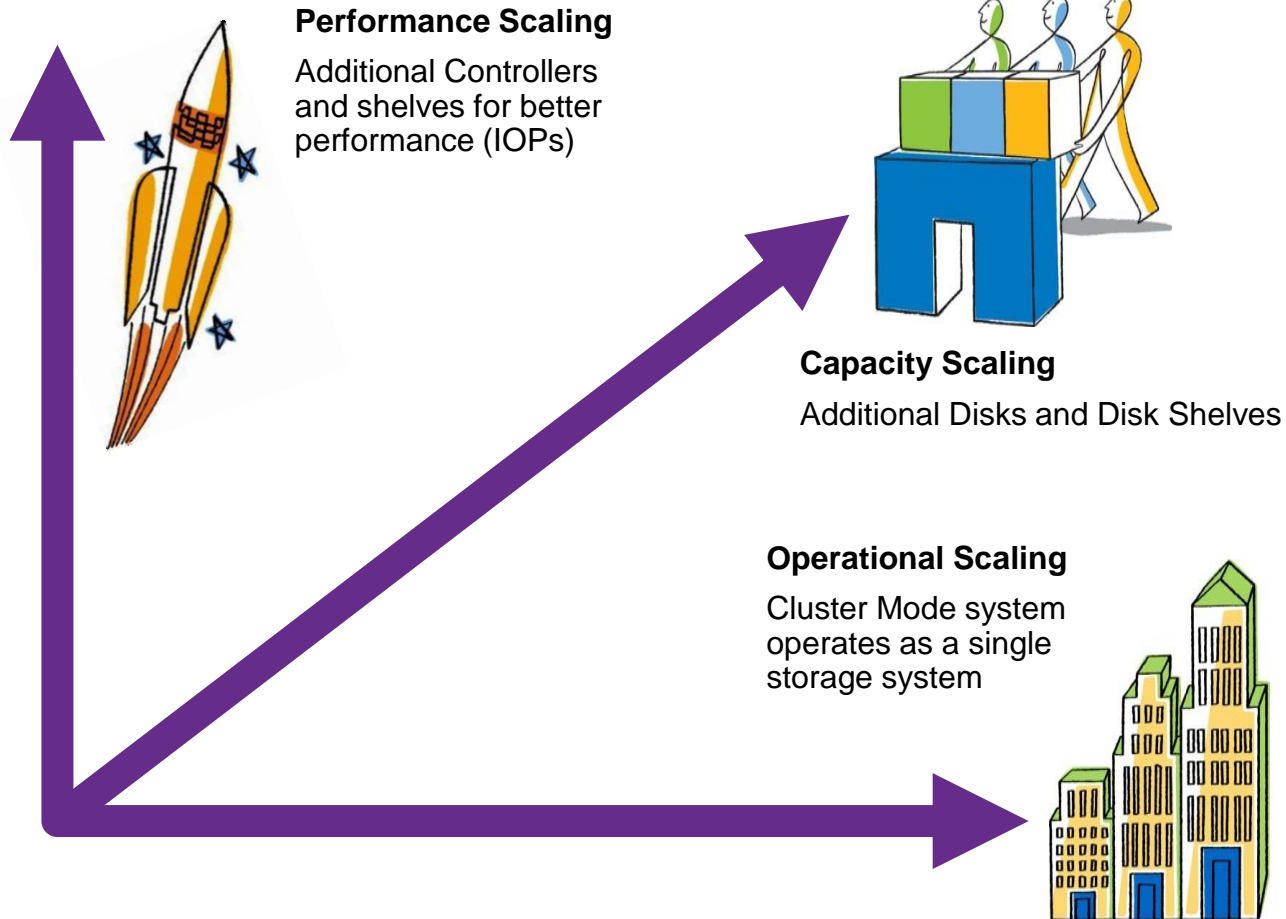
### Legend





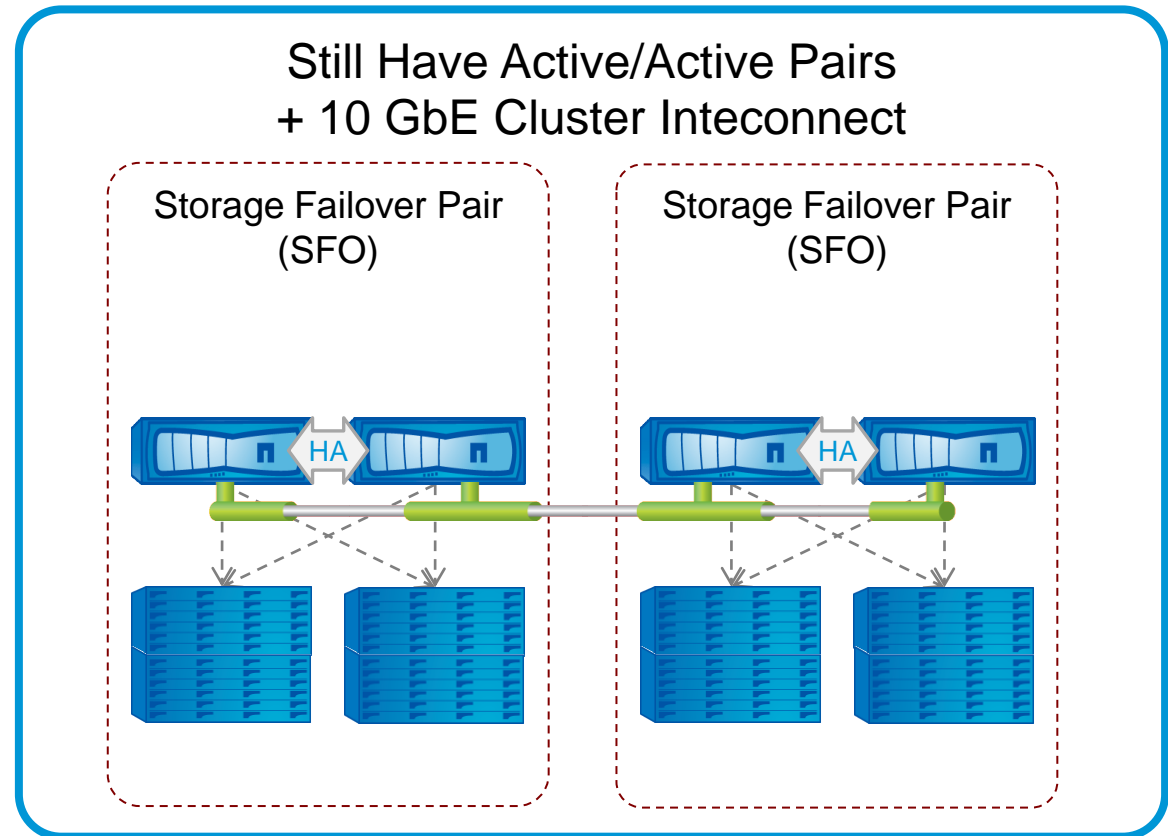
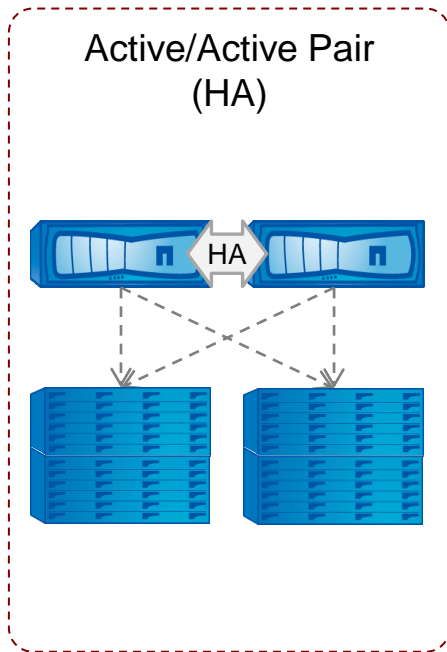
# Increasing FlexPod Single Site Infrastructure Scalability and Performance

# Scalability with Clustered Data ONTAP



# Clustered Data ONTAP Overview

**Note:** Cluster Interconnect Supported on Nexus 5010, 5020 and 5596 platforms

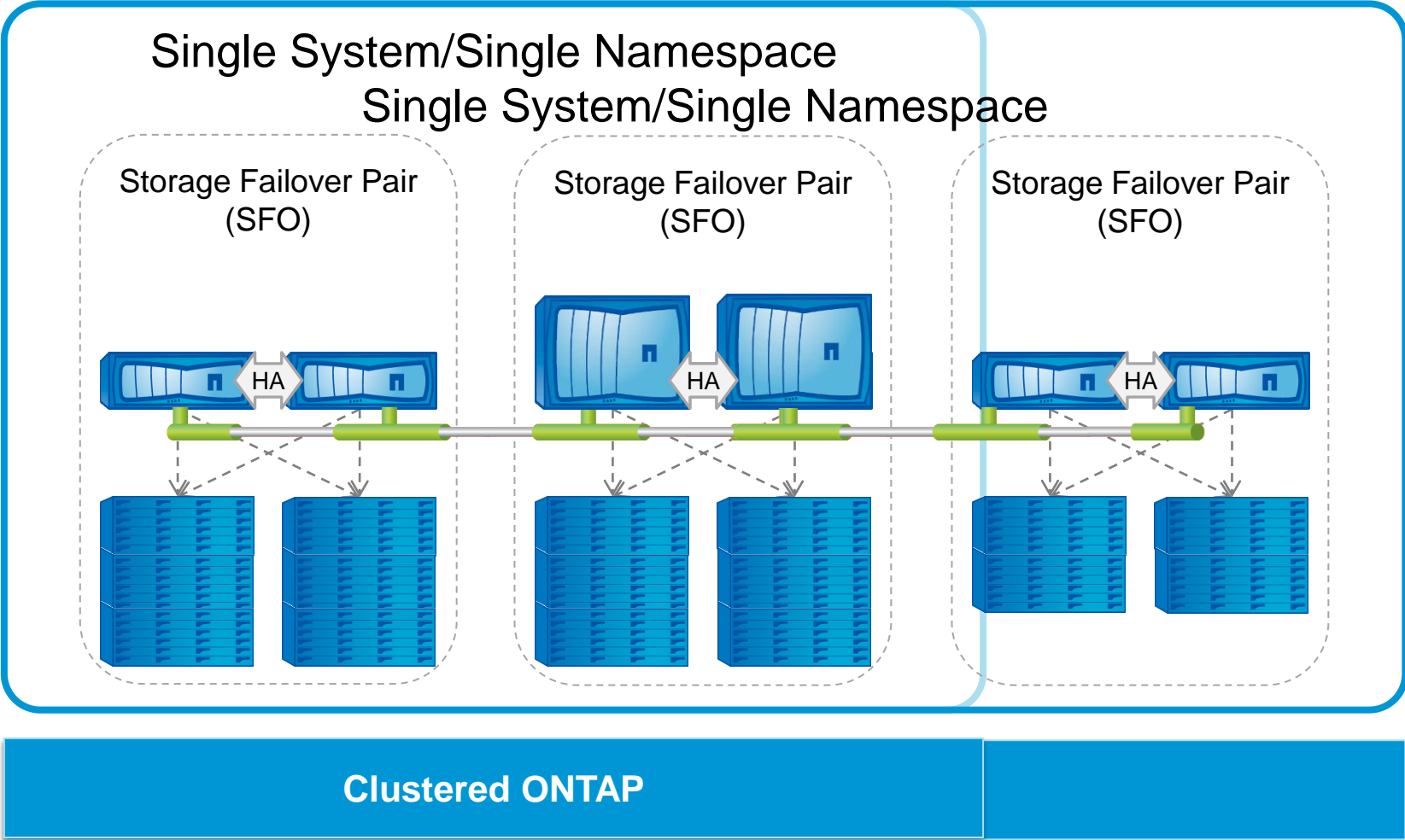


Single System/Single Namespace

7-Mode

Clustered ONTAP

# Clustered Data ONTAP Scalability



# FlexPod Scalability (Nexus 5000)

- Scale up to a total of 20 pairs of Cisco FEXs

B-Series Blade Chassis 2200 FEXs

Nexus 2000 FEXs

- Scale up to a total of 160 UCS servers

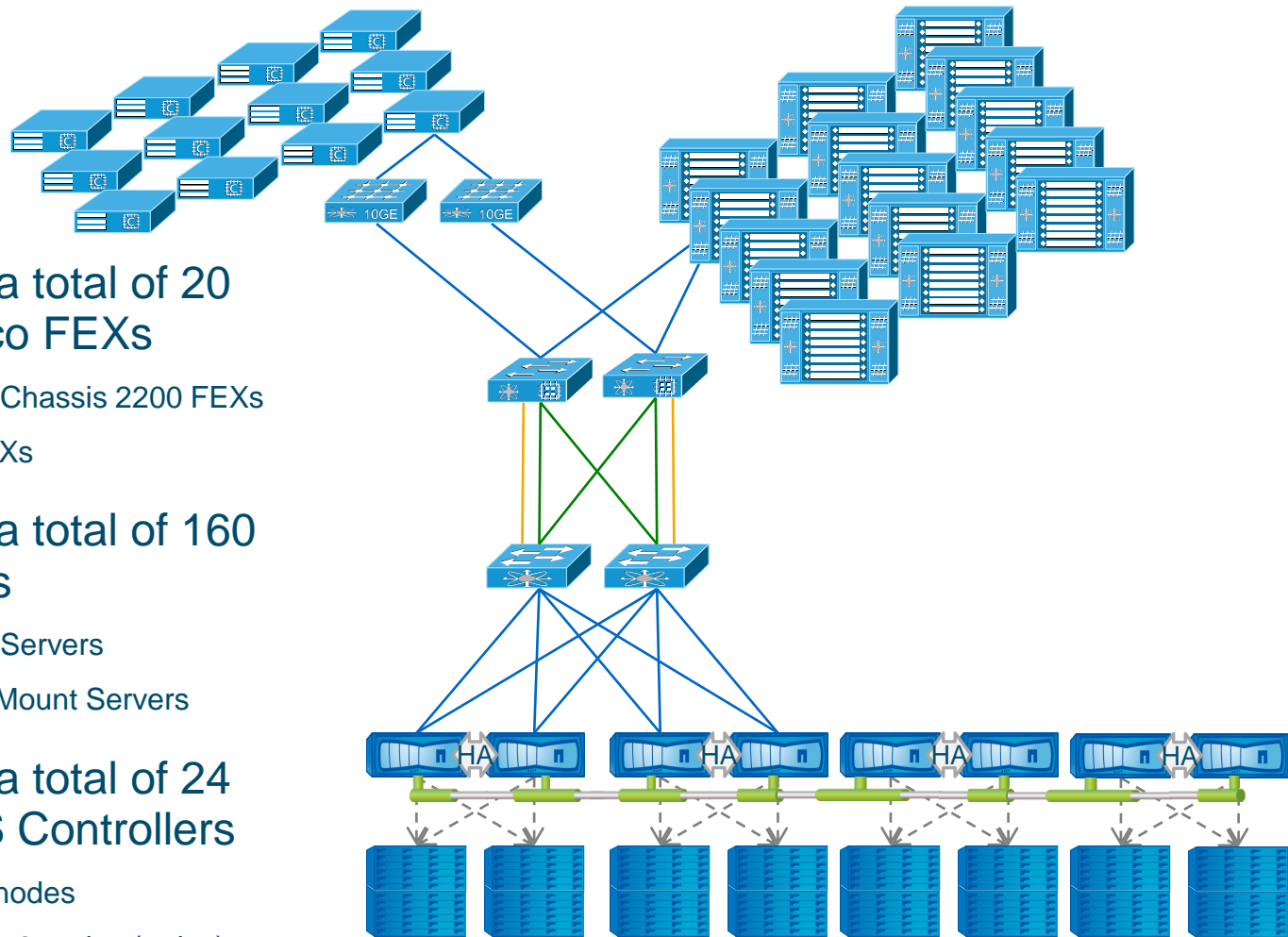
B-Series Blade Servers

C-Series Rack Mount Servers

- Scale up to a total of 24 NetApp FAS Controllers

NAS only = 24 nodes

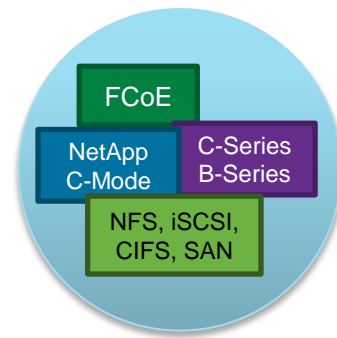
SAN and NAS = 6 nodes (today)



FlexPod with Clustered ONTAP



# FCoE and NetApp Clustered Data ONTAP



Single wire from the UCSM for C-Series M3 servers  
Effectively doubling the server density per I/O module while reducing cabling  
Requires the VIC 1225 adapter

## Discrete Uplink Model highlights:

- UCS in End Host Mode for Ethernet and Fibre Channel (NPV) traffic
- FCoE port channels offer link fault tolerance and improved aggregate bandwidth
- vPC provides link and device fault tolerance with increased aggregate bandwidth
- Mimics traditional SAN

## Benefits include

- Infrastructure consolidation
- Simplified operational model
- Operational efficiencies

Nexus 2232PP FEX

Cisco UCS  
5108 B-Series Blade Chassis  
2204XP Chassis FEX Modules  
B200 M3 B-Series Blade(s)

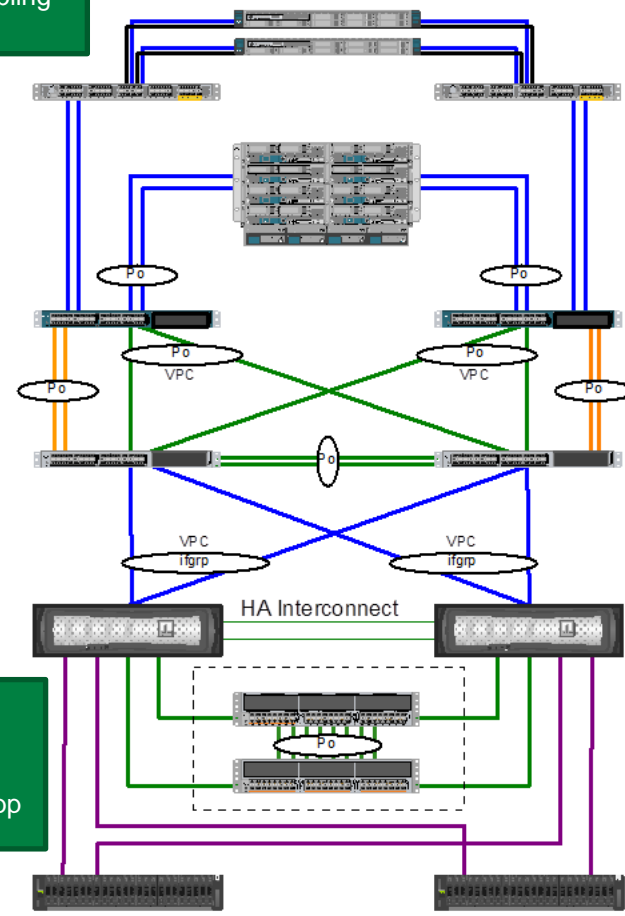
Cisco UCS  
6248UP Fabric Interconnects

Cisco Nexus  
5548UP Switches

NetApp FAS  
3250 Storage Controllers

Nexus 5596, Nexus 5010 and Nexus 5020 are certified for the cluster interconnect role.  
Configuration mandated by NetApp

NetApp  
DS2246 Disk Shelves



### Legend

1GbE only

FCoE only

SAS only

Converged

10GbE Only

# Comparing 7-Mode and C-Mode based Deployment Models

Cisco UCS  
C200 M3 C-Series Server(s)

Nexus 2232PP FEX

Cisco UCS  
5108 B-Series Blade Chassis  
2204XP Chassis FEX Modules  
B200 M3 B-Series Blade(s)

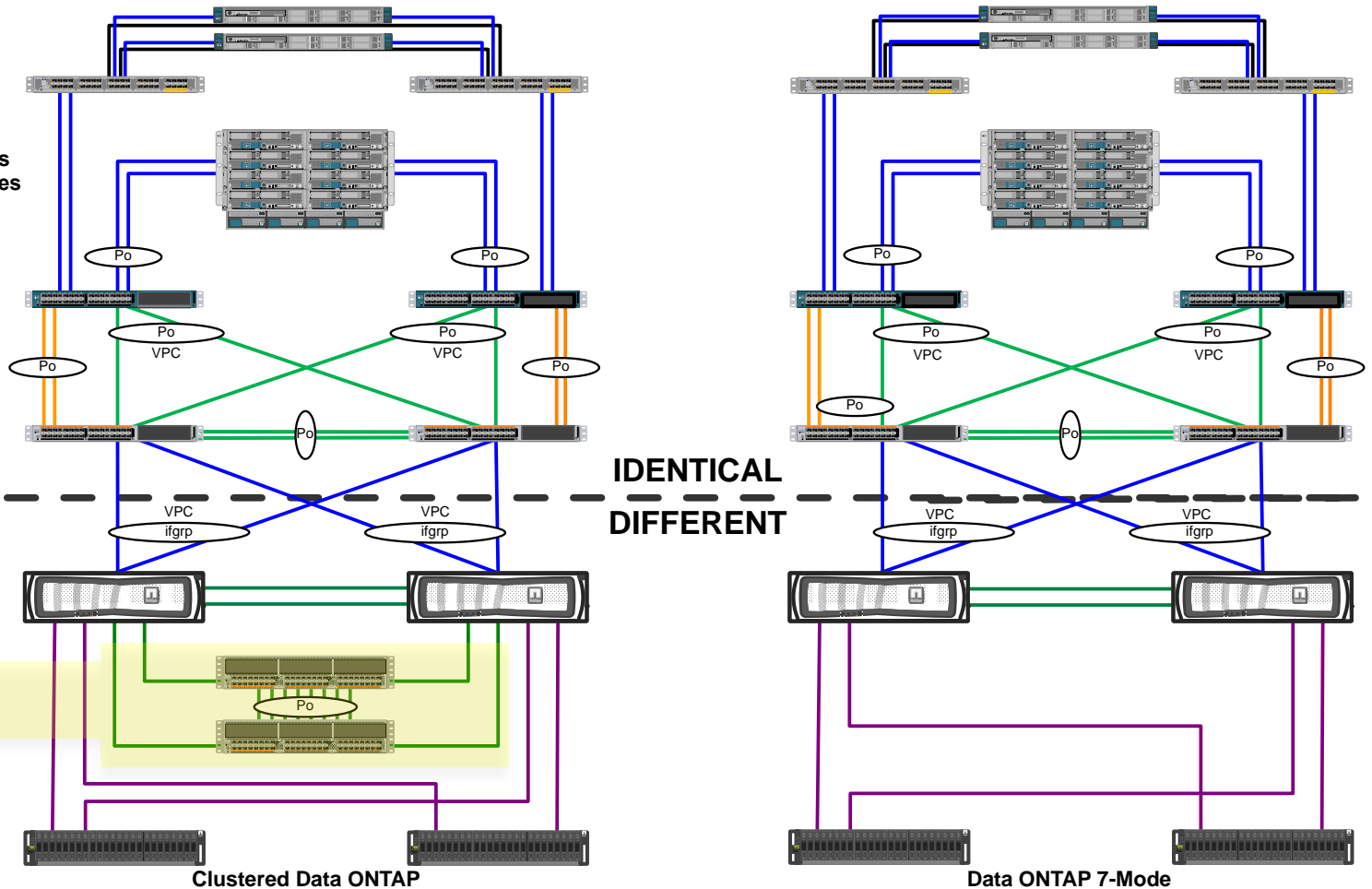
Cisco UCS  
6248UP Fabric Interconnects

Cisco Nexus  
5548UP Switches

NetApp FAS  
3250 Storage  
Controllers

Cisco Nexus 5596  
Cluster Interconnects

NetApp  
DS2246 Disk Shelves



Legend

1GbE only

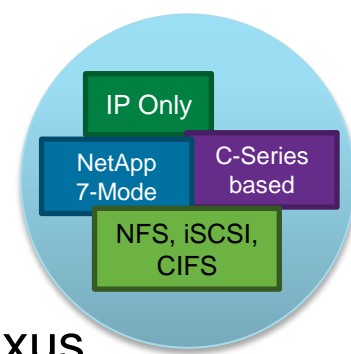
FCoE only

SAS only

Converged

10GbE Only

# Increased Scale with Nexus 7000

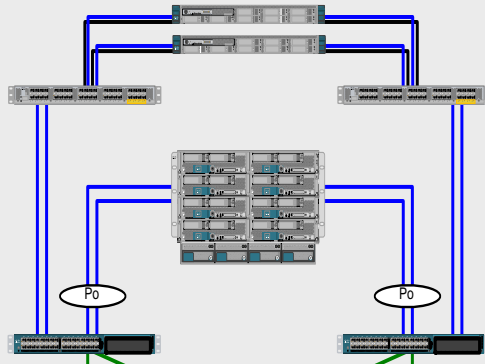


Cisco UCS  
C200 M3 C-Series Server(s)

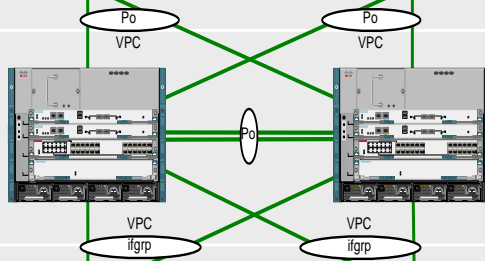
Nexus 2232PP FEX

Cisco UCS  
5108 B-Series Blade Chassis  
2204XP Chassis FEX Modules  
B200 M3 B-Series Blade(s)

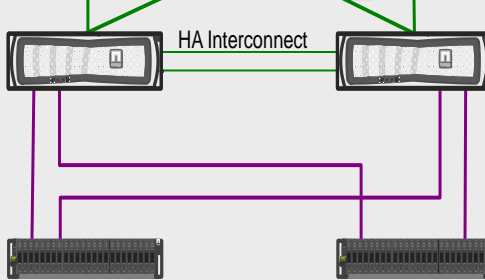
Cisco UCS  
6248UP Fabric  
Interconnects



Cisco Nexus  
7000 Switches



NetApp FAS  
3250 Storage  
Controllers



NetApp  
DS2246 Disk Shelves

Legend



- Introduction of the Nexus 7000 switch family into the FlexPod solution

M2 and Sup2 line cards validated

- IP only solution

iSCSI documented for boot

Readily integrates into environments with existing SAN

- ISSU & SSO Enables Zero Packet Loss upgrades

- vPC for link fault tolerance and improved utilization

# FCoE with Nexus 7000 NetApp 7-Mode and C-Mode

Cisco UCS  
C200 M3 C-Series Server(s)

Nexus 2232PP FEX

Cisco UCS  
5108 B-Series Blade Chassis  
2204XP Chassis FEX Modules  
B200 M3 B-Series Blade(s)

Cisco UCS  
6248UP Fabric  
Interconnects

Cisco Nexus  
7000 Switches

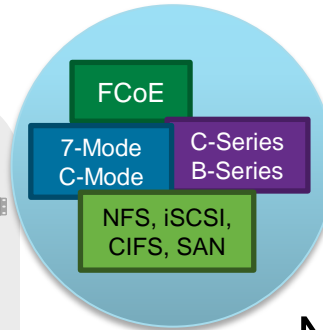
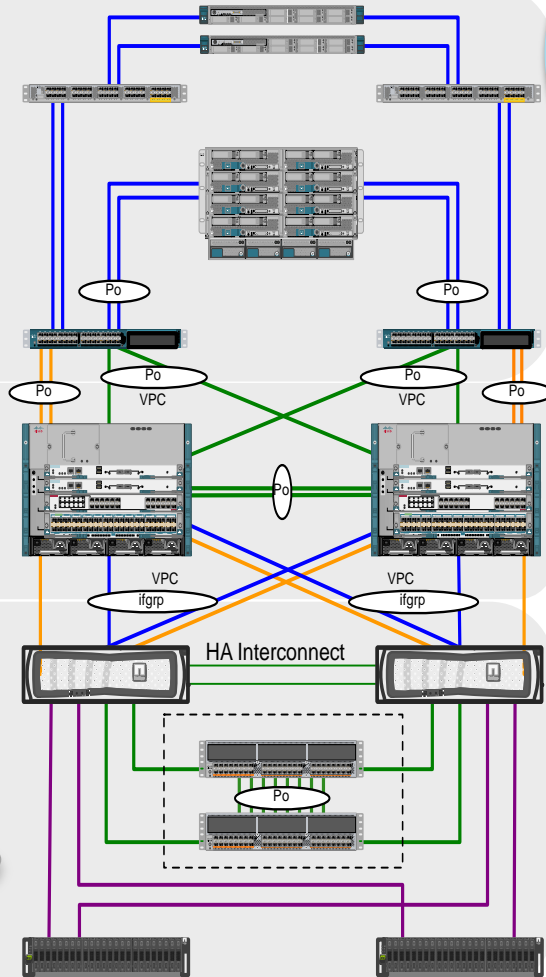
NetApp FAS  
3250 Storage  
Controllers

Cisco Nexus 5596  
Cluster Interconnects

Required in  
C-Mode Only

NetApp  
DS2246 Disk Shelves

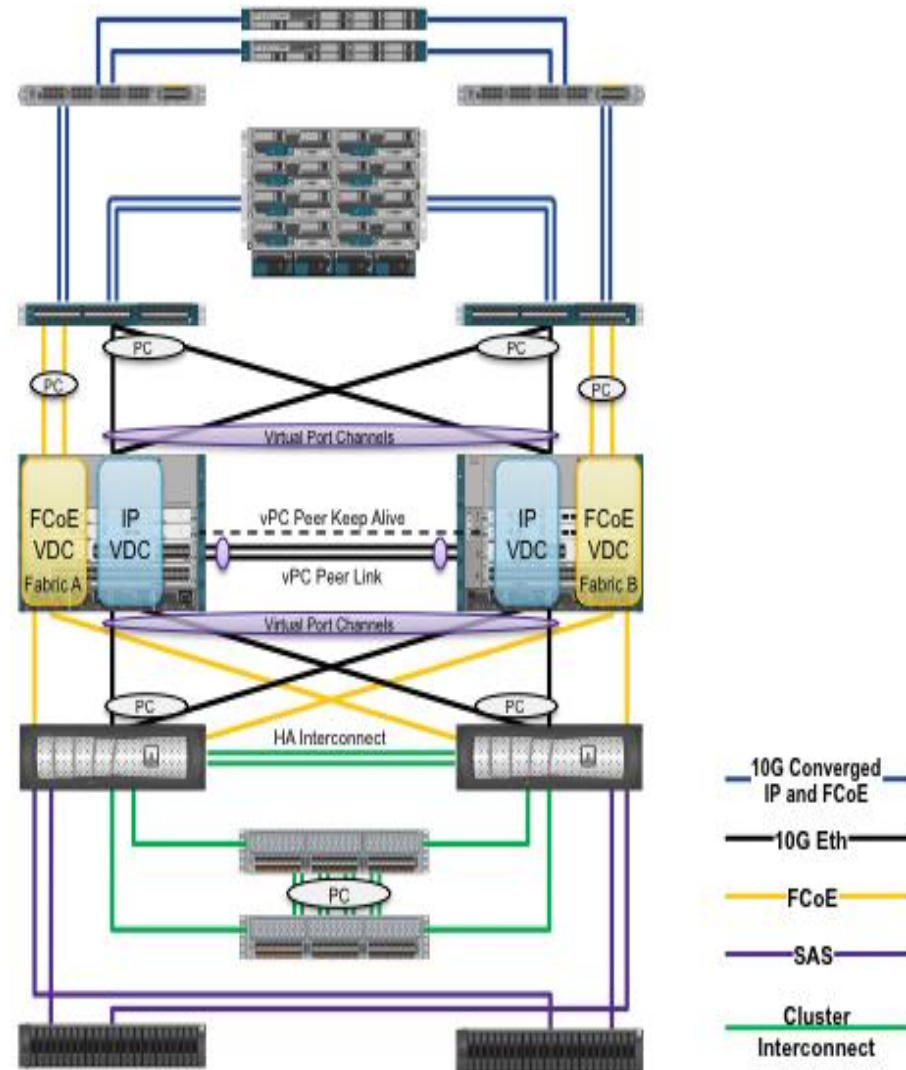
Legend



- Nexus 7000 based FlexPod with Sup2, M2 and F2 line cards
- End-to-end FCoE support
- Clustered Data ONTAP and Data ONTAP operating in 7-Mode validated
- Unified Port support for FCoE Multi-Hop with UCS 2.1
- All 10 GigE Environment

# Nexus 7000 FCoE Design Considerations

- Use Nexus 7000 storage VDC in NPIV mode
- UCS FI FCOE uplink ports must only carry FCoE traffic (storage traffic only; no IP traffic)
- Use FCoE port-channel between UCS FI and Nexus 7000 storage VDC
  - For high resiliency, dispatch port-channel member ports across 2 different LC
  - FCoE Port-channel can contain up to 16 member ports
- FCoE VDC to NetApp uses dedicated links
- Implement SAN A / SAN B topology (dedicated VLAN per VSAN)





# FlexPod Multi-Site Infrastructure

# Polling Question 3

## Are you using a multi-site Disaster Recovery (DR) solution today?

- a) We do not require multi-site DR
- b) We are using Cloud for DR
- c) We are thinking about setting up a DR site and are planning on using NetApp metro-cluster solution
- d) We are thinking about setting up a DR site and are planning on using a non-Metro-Cluster DR solutions

# Multi-Site FlexPod with NetApp MetroCluster

- The introduction of stretched clustering into FlexPod provides the following benefits:
  - Workload mobility
  - Cross-site automated load balancing
  - Enhanced downtime avoidance
  - Disaster avoidance
- The system will be comprised of the following components:
  - vSphere 5.1
  - UCS Release 2.1
  - Nexus 7000 running NXOX 6.1.2
  - NetApp Data ONTAP 8.2 in 7 Mode, MetroCluster enabled with Cisco MDS Switch.



# Nexus 7000 Based Single Site Design

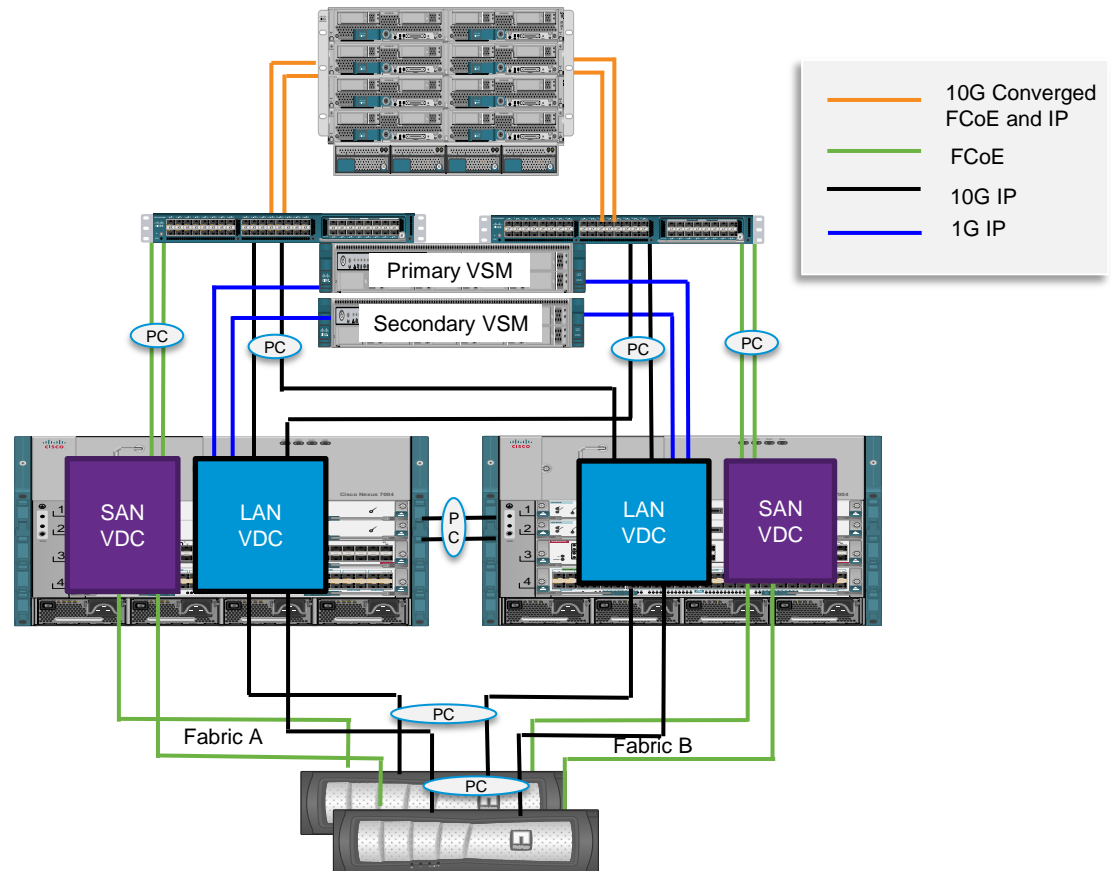
UCS B-Series Servers

UCS 6200 Fabric Interconnects

Nexus 1110 hosting  
Nexus 1000v

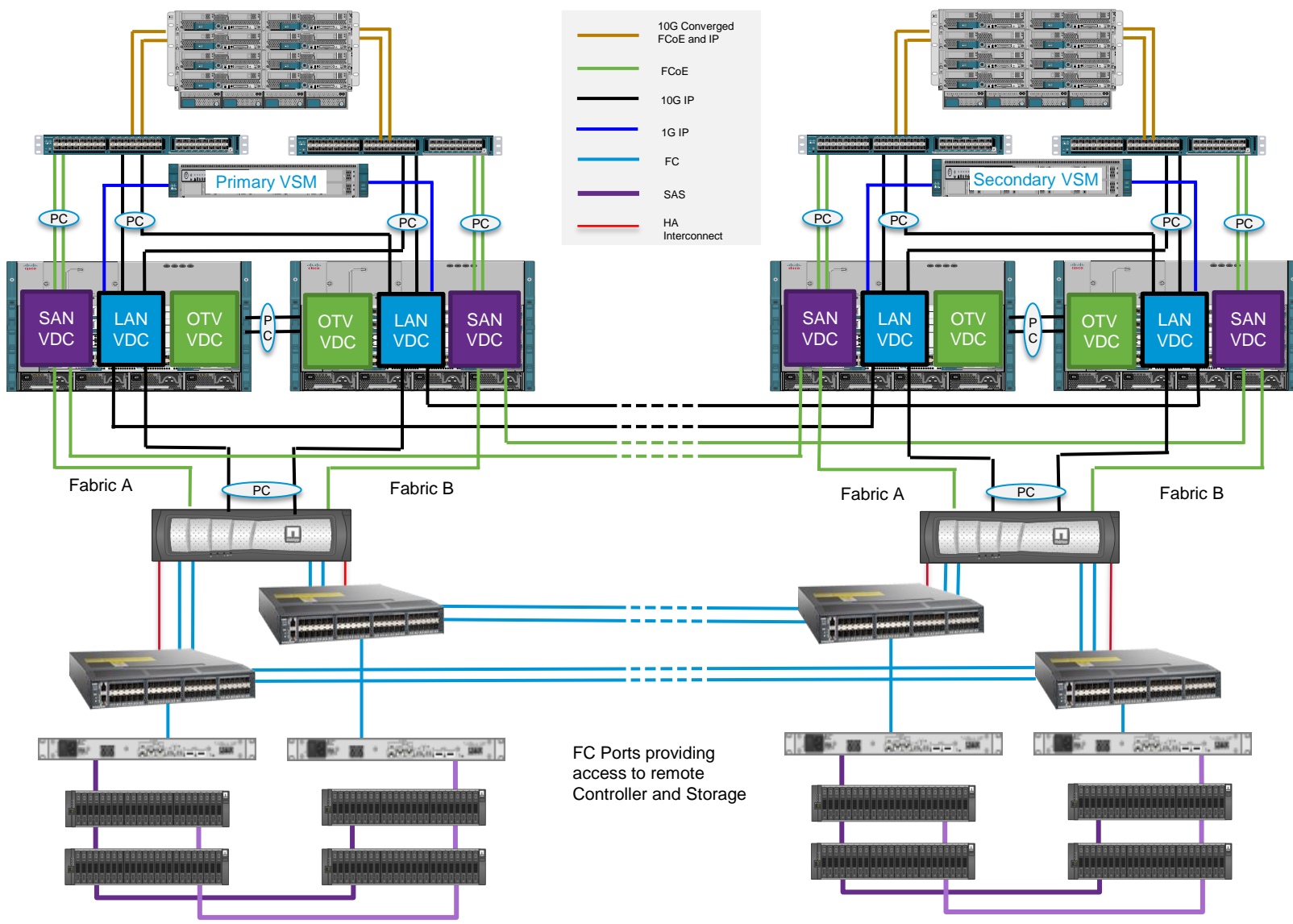
Nexus 7000 Chassis  
Supervisor 2E  
10G M2 and F2/F2e Line Cards

NetApp FAS 22xx  
NetApp FAS 32xx  
NetApp FAS 62xx

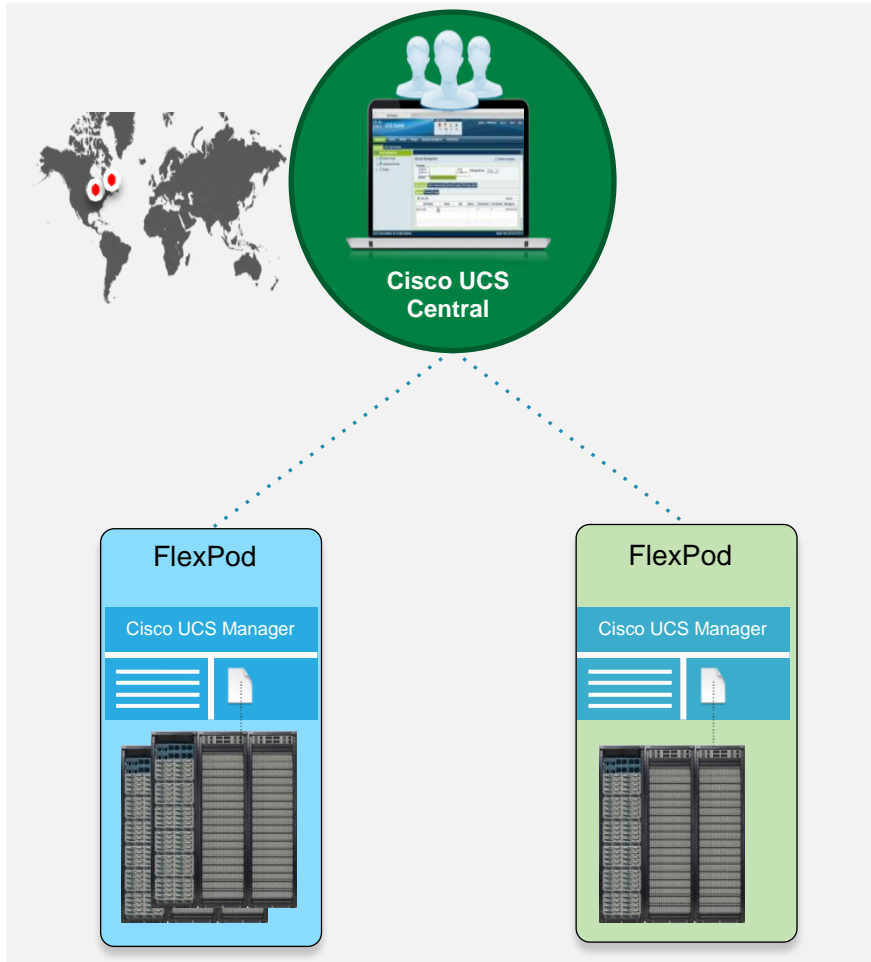


# Multi-Site FlexPod Physical Infrastructure

- UCS B-Series Servers
- UCS 6200 Fabric Interconnect
- Nexus 1110 hosting Nexus 1Kv
- Nexus 7000 Chassis Supervisor 2E 10G M2 and F2/F2e Line Cards
- NetApp Fas 32xx NetApp Fas 62xx
- MDS 9148
- ATTO FibreBridge 6500N



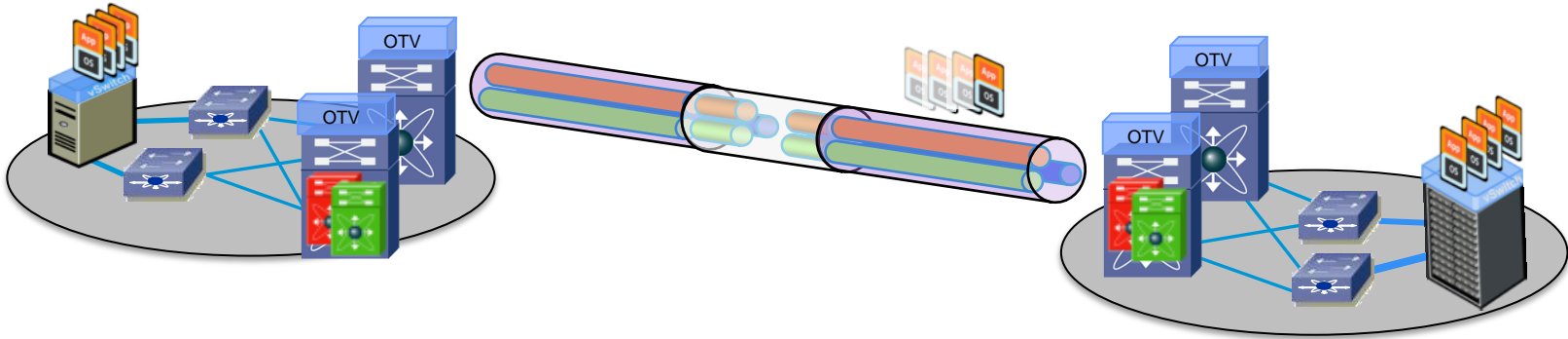
# UCS Central – Managing multiple UCS Domains



## Cisco UCS Central

- Unifies management of multiple Cisco UCS domains
- Leverages Cisco UCS Manager technology
- Simplify global operations with centralized inventory, faults, logs and server console
- A virtual machine based software solution that runs on ESX or Hyper-V hypervisors
- Automatically pull firmware updates into UCS Central and in turn UCS Manager reducing administrator overhead
- Foundation for high availability, disaster recovery and workload mobility

# Overlay Transport Virtualization (OTV)



**Overlay** - A solution that is independent of the infrastructure technology

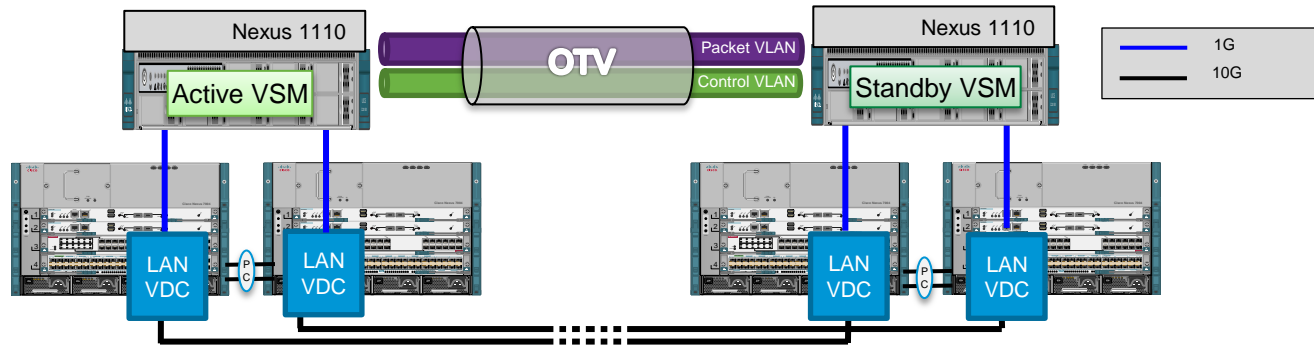
**Transport** - Transporting services for layer 2 and layer 3 Ethernet and IP traffic

**Virtualization** - Provides virtual connections, connections that are in turn virtualized and partitioned into VPNs, VRFs, VLANs and Bridge Domain instances

- OTV provides customers with resource flexibility and workload portability that span across geographically dispersed data centers
- VMware vMotion™ can now leverage Cisco OTV to easily and cost-effectively move data center workloads across long distances



# Nexus 1000v Multi-Site Deployment



## Multi-Site Deployment Highlights

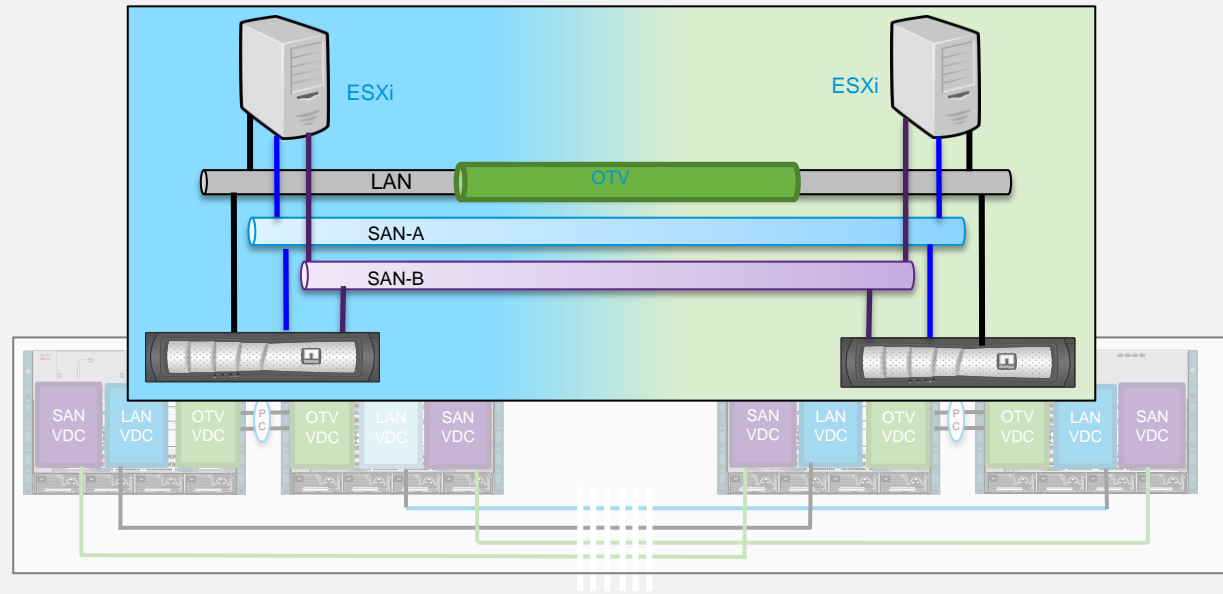
- Virtual Supervisor Module (VSM) is split across DCs
- VSM is hosted on Nexus 1110
- Layer-2 extension, needed for VSM management and control VLANs, is provided by OTV
- Max supported latency of 10ms between active and standby VSMs

## Scale (latest)

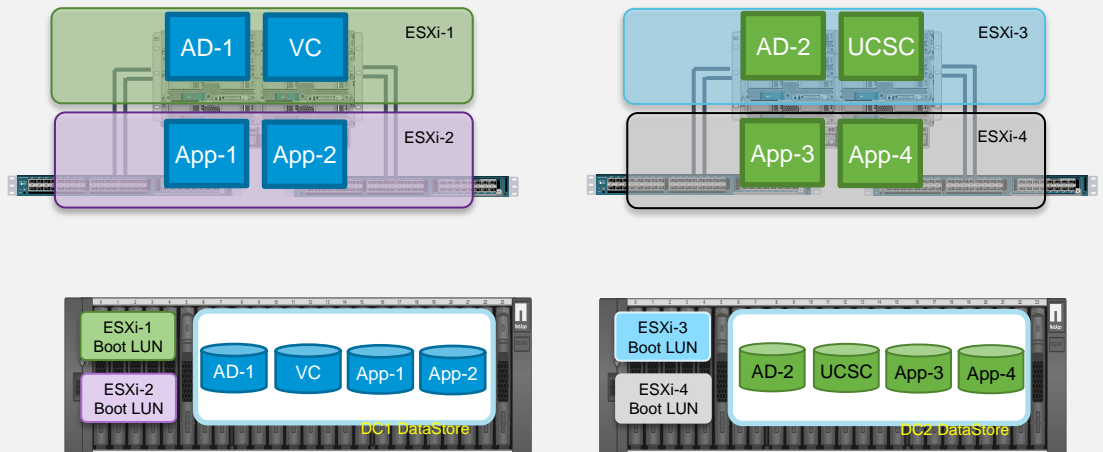
- 128 Hosts/VEM's per Distributed Virtual Switch (DVS)
- 300 Virtual Ethernet (vEth) ports per Host
- 4k vEth ports per Nexus 1000v DVS

# Multi-Site FlexPod Logical Layout

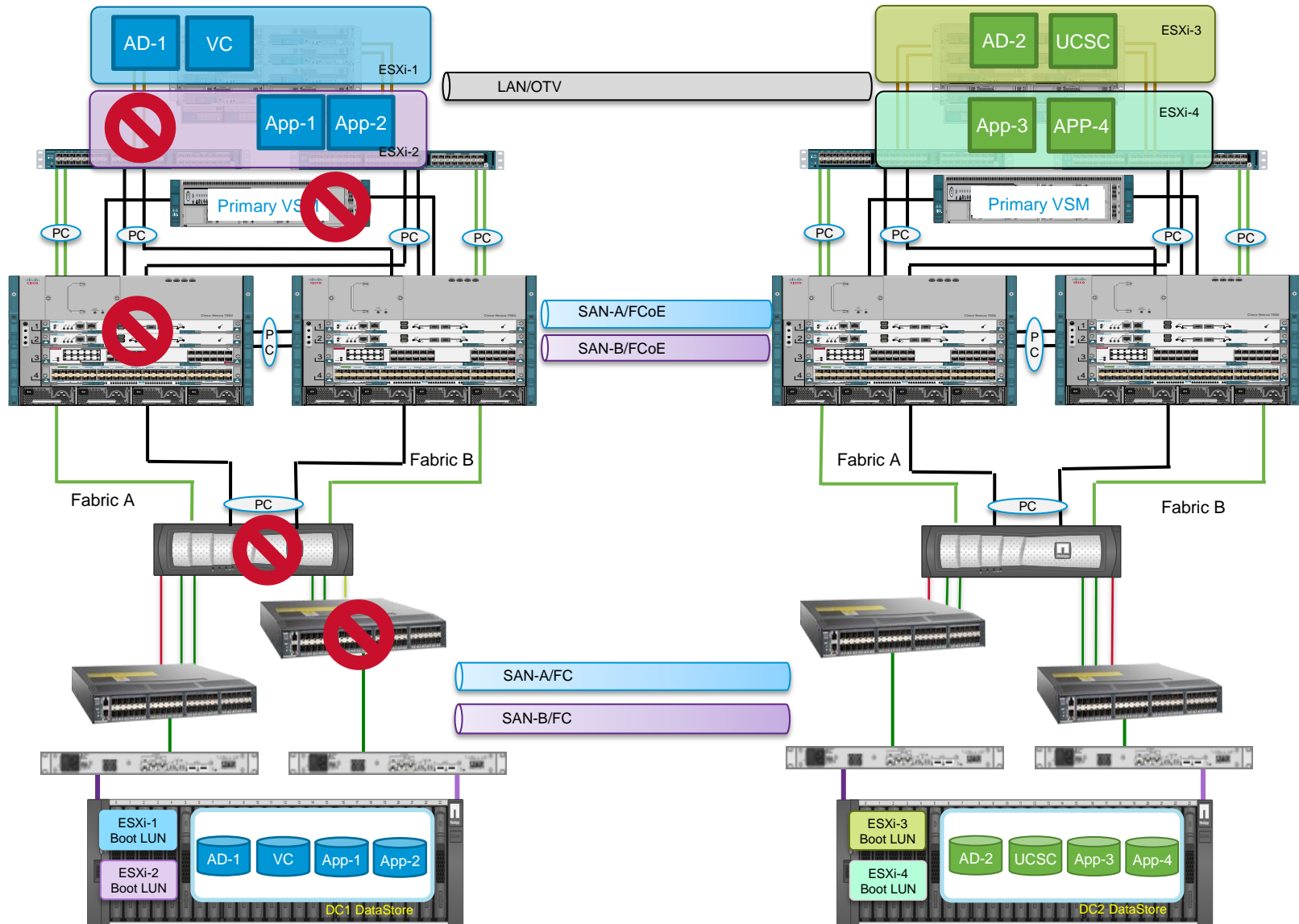
- LAN traffic is extended across the DCs using OTV
- FCoE connections between the two sites extend SAN-A and SAN-B
- Multi-Hop FCoE connections between sites enable hosts to talk to both controllers



- Create a VM Placement strategy – which VMs belong to a particular DC
- Create VM to Host Affinity Rules in VMware DRS/HA
- Use Site Specific DataStores to host VM Disks for low latency



# Multi-Site FlexPod - Fully Redundant Infra.

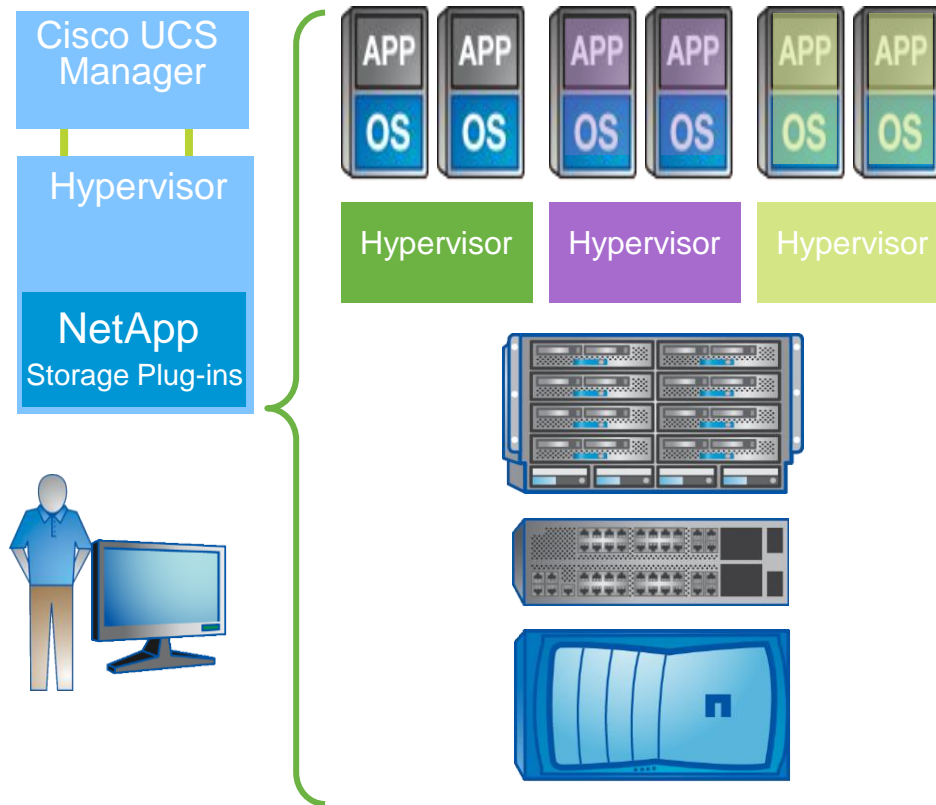




# FlexPod Management



# Centralize and Open Management



- Integration with Hypervisors
  - Automate workflows, scalable, extensible platform
  - Hypervisor agnostic
- Cisco® UCS Manager
  - Embedded unified management
  - Integrated with vCenter
- Cisco UCS Central
- NetApp® OnCommand™ Management Software
  - Integration with Unified Manager for provisioning, protection, automation
  - VMware vCenter Server or MS System Center
  - Manage NetApp heterogeneous environment

Extensible Management APIs

# Cisco Cloupia – UCS Director

## Deploy

- Add tenants
- Migrate or add applications
- Deploy Resources via Self-service UI

## Operate

- Monitor performance Trends
- Refine policies
- Set granular access rules

## Plan

- Release resources
- Add capacity
- Lifecycle management

Cisco UCS Director

# References

- Cisco-NetApp Support Site  
<http://www.cisconetapp.com/>
- Nexus 5000 Based FCoE with NetApp 7-Mode FlexPod  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/UCS\\_CVDs/esxi51\\_ucsm2\\_7modedeploy.html](http://www.cisco.com/en/US/docs/unified_computing/ucs/UCS_CVDs/esxi51_ucsm2_7modedeploy.html)
- Nexus 5000 Based FCoE with NetApp Cluster-Mode FlexPod  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/UCS\\_CVDs/esxi51\\_ucsm2\\_Clusterdeploy.html](http://www.cisco.com/en/US/docs/unified_computing/ucs/UCS_CVDs/esxi51_ucsm2_Clusterdeploy.html)
- Nexus 7000 Based IP-Only with NetApp 7-Mode FlexPod  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/UCS\\_CVDs/flexpod\\_esxi\\_N7k.html](http://www.cisco.com/en/US/docs/unified_computing/ucs/UCS_CVDs/flexpod_esxi_N7k.html)
- Nexus 7000 Based FCoE With NetApp 7-Mode FlexPod  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/UCS\\_CVDs/esxi51\\_N7k\\_fcoe\\_7modedeploy.html](http://www.cisco.com/en/US/docs/unified_computing/ucs/UCS_CVDs/esxi51_N7k_fcoe_7modedeploy.html)
- Nexus 7000 Based FCoE with NetApp Cluster-Mode FlexPod  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/UCS\\_CVDs/esxi51\\_N7k\\_fcoe\\_Clusterdeploy.html](http://www.cisco.com/en/US/docs/unified_computing/ucs/UCS_CVDs/esxi51_N7k_fcoe_Clusterdeploy.html)
- Nexus 7000 and NetApp MetroCluster Based Multi-Site FlexPod  
Published towards end of October 2013

# Q & A

Expert responding some of your questions verbally. Use the Q&A panel to continue asking your questions



# Ask The Experts Event

(with Haseeb Niazi and Chris O'Brien)



If you have additional questions, you can ask Haseeb and Chris. They will be answering from September 18 - 27, 2013

<https://supportforums.cisco.com/thread/2238067>

You can watch the video or read the Q&A 5 business days after the event at

<https://supportforums.cisco.com/community/netpro/ask-the-expert/webcasts>



# Trivia Question

(select the correct answer)

## What do Ford Motors and FlexPod have in common?

- A.** Both Ford Motor Company and FlexPod were started with two separate companies coming together to form a partnership?
- B.** FlexPod is in 35 countries worldwide as many countries as Ford Motor Company cars are in.
- C.** On July 30, the founder of Ford Motor Company, Henry Ford, was born and on July 30, 2013 – Cisco and NetApp broadened the FlexPod portfolio with new validated designs across the entire portfolio.

# We Appreciate Your Feedback!

Those who fill out the Evaluation Survey will be entered into a raffle to win:

**\$50 Amazon Gift Card**

To complete the evaluation, please click on link provided in the chat or in the pop-up once the event is closed.

# October Expert Series Webcast - Portuguese

## Topic: Data Center Virtualization Fundamentals



**Thursday, October 3, 2013**

**11:00 a.m. Brasilia City**

**3:00 p.m. WEST Lisbon**

**7:00 a.m. San Francisco**

**10:00 a.m. New York City**

Join Cisco Expert:

**Gustavo Santana**

During this live event, the expert Alejandra Gonzalez will present a technical view of the motivations, methods and technologies used in this June 2013 Cisco Press publication.

**Register for this live Webcast at:**

[http://tools.cisco.com/gems/cust/customerSite.do?METHOD=E&LANGUAGE\\_ID=P&SEMINAR\\_CODE=S18997&PRIORITY\\_CODE=](http://tools.cisco.com/gems/cust/customerSite.do?METHOD=E&LANGUAGE_ID=P&SEMINAR_CODE=S18997&PRIORITY_CODE=)



# October Expert Series Webcast - Russian

**Topic: Cisco ASR 9000 Series Aggregation Services Routers Platform Architecture and Packet-Forwarding Troubleshooting**



**Tuesday, October 8, 2013  
12:00 p.m. Moscow Time**

Join Cisco Expert:

**Anatoly Tsyganenko**

During this live event, the expert Anatoly Tsyganenko will provide an in-depth discussion of the Cisco ASR 9000 Series Aggregation Services Routers.

**Register for this live Webcast at:**

[http://tools.cisco.com/gems/cust/customerSite.do?METHOD=E&LANGUAGE\\_ID=R&SEMINAR\\_CODE=S19036&PRIORITY\\_CODE=](http://tools.cisco.com/gems/cust/customerSite.do?METHOD=E&LANGUAGE_ID=R&SEMINAR_CODE=S19036&PRIORITY_CODE=)

# Ask the Expert Events – Current English



## Topic: Best Practices for Implementing Cryptographic VPN

Join Cisco Expert: **Marcin Latosiewicz**

Learn and ask questions about implementing cryptographic VPN and how to prepare it for the future.

**Ends September 20**

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## Topic: Managing Controllers with Cisco Prime™

Join Cisco Expert: **Aunudrei Oliver**

Learn and ask questions about how to manage controllers with Cisco Prime™

**Ends September 20**

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Join the discussion for these Ask The Expert Events at:

<https://supportforums.cisco.com/community/netpro/expert-corner#view=ask-the-experts>

# Ask the Expert Events – Upcoming English



## Topic: Still Facing Challenges of Designing, Deploying, and Troubleshooting Wireless Networks?

Join Cisco Expert: **Flavien Richard**

Learn and ask questions about how to overcome the challenges of planning, designing, deploying, and troubleshooting wireless networks.

**Starts September 23**

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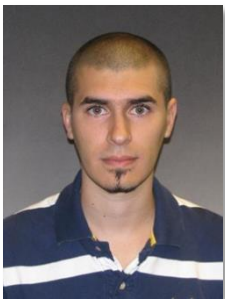
## Topic: Configuring and Troubleshooting Border Gateway Protocol (BGP)

Join Cisco Expert: **Sandeep Sharma**

Learn and ask questions about issues encountered while configuring and troubleshooting Border Gateway Protocol (BGP) across various Cisco platforms.

**Starts September 23**

---



## Topic: Wireless LAN Security

Join Cisco Expert: **Jeal Jimenez**

Learn and ask questions how to implement, configure and troubleshoot WLAN security

**Starts October 7**

Join the discussion for these Ask The Expert Events at:

<https://supportforums.cisco.com/community/netpro/expert-corner#view=ask-the-experts>

# Google Hangout – Introduction to Cisco on Demand Solutions



**Topic: Cisco on Demand Introduction Series – Session 1**

**Join Vidhya Srinivasan, Senior Manager, Cisco Services**

Learn about the new on Demand Solutions from Cisco

What the Recap at  
<http://tinyurl.com/mmubh6c>

# We invite you to actively collaborate in the Cisco Support Community and social media

<https://supportforms.cisco.com>



<http://www.facebook.com/CiscoSupportCommunity>



[http://twitter.com/#!/cisco\\_support](http://twitter.com/#!/cisco_support)



<http://www.youtube.com/user/ciscosupportchannel>



<http://tinyurl.com/cscgoogleplus>



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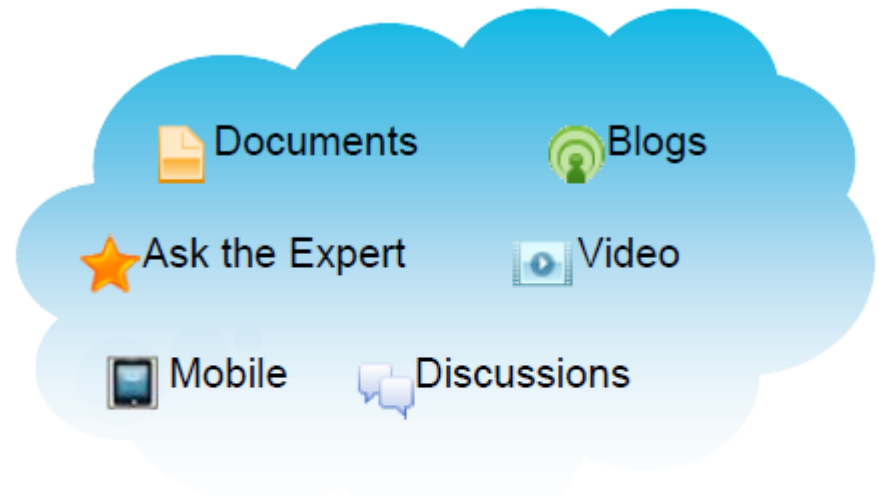
# We have communities in other languages

If you speak **Spanish, Portuguese, Japanese, Polish or Russian**, we invite you to ask your questions and collaborate in your language:

- Spanish → <https://supportforums.cisco.com/community/spanish>
- Portuguese → <https://supportforums.cisco.com/community/portuguese>
- Japanese → <https://supportforums.cisco.com/community/csc-japan>
- Polish → <https://supportforums.cisco.com/community/etc/netpro-polska>
- Russian → <https://supportforums.cisco.com/community/russian>

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# Cisco Technical Support Mobile App



**Global community members can collaborate with colleagues and other support professionals with easy, on-the-go access to the community's breadth of technical resources in their local language.**

**With the latest version of the mobile app, you can now access the Spanish, Portuguese, Japanese and Russians communities.**

<https://supportforums.cisco.com/community/netpro/online-tools/mobile-technical-support>

# Trivia Question

(select the correct answer)

## What do Ford Motors and FlexPod have in common?

- A. Both Ford Motor Company and FlexPod were started with two separate companies coming together to form a partnership?
- B. FlexPod is in 35 countries worldwide as many countries as Ford Motor Company cars are in.
- C. On July 30, the founder of Ford Motor Company, Henry Ford, was born and on July 30, 2013 – Cisco and NetApp broadened the FlexPod portfolio with new validated designs across the entire portfolio.**

Thank You for  
Your Time

Please Take a Moment to Complete the Evaluation



Thank you.



# 7-Mode or Cluster Mode based FlexPod?

## Data ONTAP® 7-Mode

- Existing FlexPod customers leveraging Data ONTAP 7G and/or Data ONTAP 8.x 7-Mode who are looking to upgrade
- Customers requiring an application that has not yet been validated with FlexPod and clustered Data ONTAP
- Midsize to small enterprises: seeking small scale, entry-level solutions
- Customers requiring features not yet available in clustered Data ONTAP; SnapVault®, SnapLock®, etc.

## Clustered Data ONTAP®

- Existing FlexPod customers leveraging Data ONTAP 7G and/or Data ONTAP 8.x 7-Mode who are looking to transition to clustered Data ONTAP
- Large to midsize enterprises: seeking scalable, shared IT solutions for non-disruptive operations
- Current clustered Data ONTAP customers interested in building a FlexPod
- New FlexPod customers and new FlexPod installations at existing accounts



Transition to Clustered Data ONTAP



# Best Practices

# Gotchas and Best Practices

- For vMSC, VMware recommends:
  - Set VMware HA Admission Control Policy to 50%
  - Create two DataStores and use DRS in each DC
  - Use four DataStores for heartbeat
  - Configure Additional Isolation Addresses
  - Set `das.maskCleanShutdownEnabled` to True
  - Define VM to Host Affinity Rules
- OTV adds a 42 byte overhead to every packet
- AD should be distributed across the two sites and vCenter should be able to use either Domain Controller
- When using both UCS Manager and UCS Central concurrently, use unique names and values for global policies, templates and pool. Adding a prefix before name (“G\_”) is common.
- Boot from SAN policies and zoning should include both local and remote controller WWPNs.
- **Ensure** `cf.takeover.change_fsid` option is set to “off” on the NetApp controller

# Best Practices for UCS

- Use UCS Fabric Interconnect in End Host Mode
- Leverage Service Profiles for stateless computing (SAN or iSCSI boot)
- UCS-Manager Templates; Initial vs. Updating
- Chassis/FEX Discovery Policy (use port channeling)
- Enable Jumbo Frames
- Wire once for bandwidth today and tomorrow
- VIC for virtual interfaces to the OS / Hypervisor



# Best Practices for Network

- Enable Jumbo Frames and CDP
- Disable Ethernet Flow Control
- Use LACP IFGRPs where possible, and leverage vPCs
- Use VLANs/VSANs to separate traffic types
- Configure port-channels and vlan trunking on most ports  
Allows for seamless addition of vlans or ports
- Use QoS to prioritize important traffic
- Zoning for FC/FCoE

# Best Practices for Storage

- Utilize one to many Vservers
- Add controllers to storage cluster in SFO pairs
- Configure LIFs to auto failback
- Set up LIF failover groups between SFO pairs
- Maintain locality for LIFs and volumes
- Leverage dynamic multi-mode (LACP) Interface Groups
- Single Initiator Zoning

# Best Practices for FlexPod

- Redundancy end-to-end, multi-home where applicable and use multiple physical connections
- Enable secure protocols (SSL, SSH) with minimum 1024 key size
- Utilize LACP
- Enable Jumbo Frames
- Enable CDP and NTP
- Leverage validated workload best practices if available